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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/018,618	12/17/2001	Maarten Brussee	NL 000188	4957

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EXAMINER

WILKINS III, HARRY D

ART UNIT	PAPER NUMBER
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1742

DATE MAILED: 11/19/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/018,618

Applicant(s)

BRUSSEE ET AL.

Examiner

Harry D Wilkins, III

Art Unit

1742

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 October 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-77 is/are pending in the application.
- 4a) Of the above claim(s) 30-38 and 68-76 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 39-67 and 77 is/are allowed.
- 6) ☒ Claim(s) 1,2,9,14,16,17,24,26 and 28 is/are rejected.
- 7) ☒ Claim(s) 3-8,10-13,15,18-23,25,27 and 29 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of group I in Paper No. 5 is acknowledged.

Claim Objections

2. Claims 19 and 62 are objected to because of the following informalities: in claim 19, since "pulse like periods" lacks antecedent basis, it appears that claim 19 should depend from claim 18 instead of claim 1 and in claim 62, it appears that the reference to "claim 33" should read "claim 39". Appropriate correction is required. Further Examination will be based on the corrected claim dependencies.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 2, 9, 24, 28 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Dehner (US 3,652,440).

Dehner anticipates the invention as claimed. Dehner teaches (see col. 1, lines 9-17 and 50-71) a method of controlling a process of electrochemical machining a conductive workpiece that includes: (a) applying an electric current between the workpiece and the electrode while [inherently] supplying electrolyte therebetween; (b) measuring the voltage across the circuit; (c) adapting the current in response to the measured voltage by determining when a spark occurs across the workpiece electrode

Art Unit: 1742

gap (i.e.-determining information relating to the spectral composition of the measured voltage during the period of machining).

Regarding claim 2, Dehner measures (see col. 1, lines 9-17 and 50-71) the amplitude of high frequency voltage.

Regarding claim 9, Dehner measures (see col. 1, lines 9-17 and 50-71) the amplitude of high frequency voltage and compares it to a minimum threshold and when the amplitude goes above the minimum, the "adapting" begins.

Regarding claim 24, Dehner teaches (see col. 2, lines 56-67) that if a spark occurs, the current is quickly interrupted.

Regarding claim 28, Dehner (see figure 1, "Pulse Shaping and Timing Network") teaches applying the electric current in pulses. Because of the way the means are set up in the apparatus of Dehner, the period when the checking is done is only when there is a chance of a spark occurring, i.e.-the duration of a pulse.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

Art Unit: 1742

2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claims 14 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dehner (US 3,652,440) in view of Zemba, Jr. et al (US 4,734,176).

The teachings of Dehner are described above in paragraph no. 4.

Dehner (see figure 1, "Pulse Shaping and Timing Network") teaches applying the electric current in pulses. Dehner is silent about switching the polarity of the applied electric current. However, Zemba, Jr. et al teach (see abstract) reversing the polarity during ECM to cause the cleaning and removal of deposited materials. Therefore, it would have been obvious to one of ordinary skill in the art to have adapted the method of Dehner to also reverse the polarity of the electric current pulses in order to effect cleaning of deposited waste.

8. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dehner in view of Zemba, Jr. et al as applied to claim 16 above, and further in view of Altena et al (US 6,214,200).

The teachings of Dehner in view of Zemba, Jr et al are described above in paragraph no. 7.

Dehner in view of Zemba, Jr et al do not teach first determining the distance between the workpiece and electrode by contacting the two and applying a measurement current to determine contact or applying the cleaning pulses prior to bringing the workpiece and electrode into contact.

However, Altena et al teach (see claim 1 and 7) a method of determining the distance between the workpiece and electrode by contacting the two and applying a measurement current to determine when contact between the two is lost.

Therefore, it would have been obvious to apply the method of Altena et al because it provides an easy way of achieving very small working distances in ECM (see abstract). It would have been within the expected skill of a routineer in the art to have applied the cleaning pulses prior to bringing the workpiece and electrode into contact in order to remove any deposits on the electrode, which would have interfered with the contact between the electrode and workpiece.

[It is noted that Altena et al appears to be commonly owned with the present application. Also, Altena et al is also only available under 35 USC 102(e). Thus, this rejection can be overcome by a showing under 35 USC 103(c) showing common ownership at the time of invention.]

9. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dehner in view of Edwards et al (US 5,820,744).

The teachings of Dehner are described above in paragraph no. 4.

Dehner does not teach controlling the electrolyte pressure.

Edwards et al teach (see abstract) that electrolyte (i.e.-pump) pressure is monitored to adjust the controlling variables. Thus, Edwards et al disclose that electrolyte pressure was a known result effective variable.

Therefore, it would have been obvious to one of ordinary skill in the art to have adjusted the electrolyte pressure because it was known to be a result effective variable in an electrochemical machining process as evidenced by Edwards et al.

Allowable Subject Matter

10. Claims 39-67 and 77 are allowed.
11. Claims 3-8, 13, 15, 18-23, 25, 27 and 29 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
12. The following is a statement of reasons for the indication of allowable subject matter: The closest prior art contains Dehner (US 3,652,440), Matthes (US 4,331,524) and England (US 4,545,874).
 - a. Regarding claims 3-8, none of the prior art teaches or suggests checking the harmonic frequency of the waveform constituted by the measured voltage;
 - b. Regarding claim 10, none of the prior art suggests comparing the information to the average amplitude across a time interval, instead the prior art merely teaches using a set minimum;
 - c. Regarding claims 11-13 and 77, the prior art does not teach or suggest changing the operation of an ECM cell from continuous current to intermittent current;
 - d. Regarding claim 15, there is no motivation in the prior art to apply additional electric current passivation pulses with a voltage having an amplitude

Art Unit: 1742

which is inadequate to dissolve the workpiece and a passivation film on the workpiece;

e. Regarding claims 18-23, the prior art does not recognize the need to change the duration of the pulses;

f. Regarding claim 25, the prior art does not recognize the need to control the phase shift between the oscillatory movement and the start of applying the electric current;

g. Regarding claim 27, the prior art does not recognize the need to control the speed of the oscillatory movement of the workpiece and electrode;

h. Regarding claim 29, the prior art does not recognize a need to monitor variations in process conditions during any specified time; and

i. Regarding claims 30-67, the prior art does not teach or suggest the combination of voltage measurement means, process adjusting means, controlling means and analyzing means as claimed.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Harry D Wilkins, III whose telephone number is 703-305-9927. The examiner can normally be reached on M-Th 10:00am-8:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy V King can be reached on 703-308-1146. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Application/Control Number: 10/018,618
Art Unit: 1742

Page 8

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Harry D Wilkins, III
Examiner
Art Unit 1742

hdw

ROY KING 
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700